STUDY PROJECT

QUALITY CIRCLES

BY

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QUALITY CIRCLES

AN INDIVIDUAL STUDY PROJECT

by

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One method used to overcome declines in both productivity and product quality by means of employee involvement is the Quality Control Circle program. This study will suggest applications of Quality Circles in the Army and Department of Defense. It will focus on the principles, practices, techniques and tools associated with Quality Circles. This process initiates change and challenges the status quo. In some organizations, it represents a big change in the work culture, it also explores the training of key personal and finally, it discusses the origin and the key elements for a successful program.

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CHAPTER 1

INTRODUCTION

As a nation we are faced with one of the most challenging periods in our history. In the 1990s our senior leadership must direct all its efforts to manage the resources of a shrinking military budget. The current administration continues to be fueled by the new wave philosophies of "glasnost" and "perestroika". Militarily we must maintain the important gains already made in readiness. At the same time we must continue to steadily improve in the face of greater austerity, increasing technological complexity, and a growing diversity of threats. The Department of Defense budget leaves no room for solving problems caused by poor quality.

Quality implementation demands the establishment of a command climate that exercises initiative and continuous involvement in the process. In this regard, management in both government and industry must create climates which will foster quality and productivity improvement programs. We must change our management styles, redirect our workforce, implement new processes, and, most importantly, listen to our employees. Quality must become an integral element in everything we do.

There is no single perfect way to implement a Quality Control Program at any Army installation, although there are certain principles to follow in such an implementation. For example, increased productivity is only one of the proposed benefits of such programs. A command climate for increasing

productivity will almost inevitably require establishing a sense of trust and mutual respect.

Implementing a command climate may be comparable to techniques used to establish Quality Circles. Quality Circles are based on an orientation which allows employees to influence changes in the organization, which are carried out to bring about improvements in quality and productivity. It involves sharing power with lower level employees and providing training for those employees. Lower level employees make suggestions for contributing to the improvement and development of the organization. They are allowed to participate in building an organization in which work is meaningful.

Quality Control Circles, also called QC's, QC Circles, or Quality Circles, can be defined as a group of four to 12 employees who work together and share similar duties, generally under on first-line supervisor. They meet regularly for one hour per week, on duty time, to identify, analyze and solve or recommend solutions to problems which they encounter in the process of carrying out their responsibilities. In addition to solving problems, these circles have the potential to improve employee morale and productivity.[1]

BACKGROUND

The quality circle process is a modern interpretation of an old idea: That workers can provide meaningful suggestions for improvement of organization efficiency. Frederick Taylor, as

early as 1911, stated in Principles of Scientific Management that:

> The first of the great principles of scientific management, the first of the new burdens which are voluntarily undertaken by those on the management side is the deliberate gathering together of the great mass of traditional knowledge which, in the past, has been in the heads of the workmen, recording it, tabulating it, reducing it in most cases to rules, laws, and in many cases to mathematical formula, which, with these new laws, are applied to the cooperation of the new management to the work of the workmen. This results in an immense increase in the output.[2]

Tailor's suggestions for the most part were ignored. For decades many large corporations and industrial firms could best be described as bureaucratic organizational structures with strict hierarchies of authority, clear definition of tasks, and many formal rules and procedures. They offered few, if any, outlets for employee creativity, and suggestion programs were largely disregarded.[3]

Since Taylor's day, the science of management has moved ahead on the basis of concepts and innovative thinking contributed by industrial psychologists, management experts, and others dedicated to progressive management practices.

The Quality Circle concept has emerged as a practical application of principles consistent with Taylor's early advice to management. Though the philosophy and techniques which eventually gave rise to the Quality Circle concept were developed in the United States, they were first applied on a large scale in Japan.

The notion of participation comes more into focus in the 1930's. The idea was that the more people are involved in the challenges of production, the more productive they will be. A supervisor was encouraged not tell workers what to do, nor ask them to do it. Rather, the supervisor inspired them to participate; they then became caught up with being more productive through their own involvement. Basically four categories of participative management techniques were observed during this period: Job redesign, Management by Objectives (MBO), Quality of Work Life (QWL) and Quality Circles.[4]

JOB REDESIGN

One of these involved redesigning jobs. Formerly this was called job enlargement, then job enrichment, and later job redesign. The basic principle is the same. The idea is that a person who is involved in rethinking his or her job and what it contains is very likely, particularly with professional help, to want to expand it by taking on more horizontal and vertical activities and assuming responsibility for them. This tends to increase the complexity of work in both directions. Once complexity is increased, the job requires more thought and involvement; therefore one person is contributing more output under the redesigned job than previously.[5]

MANAGEMENT BY OBJECTIVE (MBO)

MBO has become a part of our national language. The idea is that when a person sets objectives, that person becomes involved in demonstrating an ability to accomplish these objectives. The result, of course, is greater productivity.

Management by objectives tends to create an organizational climate where the decision making power is concentrated and centralized in the hands of a few, increasing the gap between management and the workers. It encourages an incentive structure that does not reward, but often punishes, workers when they do not meet their objective.

Many people find that management by objectives succeeds at first. But then, when achieving the objective becomes dulled by repetition, work tends to return to normal levels.

QUALITY OF WORK LIFE (QWL)

This approach to better productivity through workers participation has been emerging in the past few years. QWL encompasses a vast range of schemes, from renamed employee suggestion systems to redrawn chain-of-command charts. Some programs concentrate on "hard" issues, such as product quality or productivity, while others focus on attitudes and factory relations. The concept is that if workers are involved more directly in the challenges of production, they will respond with ideas and efforts that improve productivity. With this "direct" participation, the formal supervisory system is replaced by QWL

specialists, who in turn lead discussions and act as communications channels to higher levels of management.[7]

QUALITY CIRCLES

A quality circle consists of a small group of employees, usually from the same workplace and under the same supervisor, who volunteer to meet for the purpose of identifying and solving problems. They look at problems in their work area that affect their own jobs. The group itself applies the solutions, if they have the authority. Otherwise management is presented with their recommendations, and implementation then rests with management.[8]

PURPOSE

The purpose of this study is to examine Quality Circle applications in the Army and DoD. The implementation of Quality Circles can improve organizational effectiveness and serve as the basis for the formulation of other quality improvements programs. The Quality Circle process tends to focus on small group dynamics, but can also be cross-functional. They can be directed to other quality control teams in an organization. Together the integrated effort will benefit and improve performance at every level. The Quality Circle can be an effective mechanism to bridge the gap between people and productivity.

This study will examine the principles, practices, techniques and tools associated with the Quality Circles. It

also explores some of the related training for key personnel and their subordinates. Finally, we will examine the origin, the elements for a successful program and problems in managing Quality Circles.

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CHAPTER 2

ORIGIN OF QUALITY CIRCLES

Quality circles originated in Japan in the early 1960's, where management theory was linked to the application of statistical techniques. Modern statistical quality control techniques were first introduced to Japan by America in the early 1950s through W.Edward Deming's lectures on statistical methodology and J.M. Juran's courses on management of quality control.[1] Juran emphasized that courses on management of quality control should be practiced at all levels of management; the Japanese expanded upon this and taught statistical quality control techniques to hourly employees as well as to management.[2] These ideas spread rapidly through many major Japanese firms. In 1962, Dr. Kaoru Ishikawa tied these new quality control methods to the theories of Maslow, Herzberg, and McGregor to produce the quality circle concept, which emphasizes that the recognition, development, and utilization of the intellectual potential of the worker will increase motivation and job satisfaction. Quality circles also seek to satisfy human creative and social needs. The Union of Japanese Scientists and Engineers (JUSE) encouraged the use of quality circles and began to offer quality circle training courses, including a series of radio and television programs describing quality circles.[3]

Early theorists generally believed that quality circles could exist only under the conditions found in Japanese organizations. Substantial differences existed between Japanese

and Western organizations in the areas of organizational structure, management style, employee loyalty, and cultural attitudes. These were frequently cited as reasons why quality circles could not be transferred to Western corporations.[4]

Japan has traditionally been characterized as a collectivity-oriented or group-minded society, wherein the individual and the contribution of the individual have been de-emphasized. Teamwork becomes very important, employees share group values and strive to achieve company goals.[5]

Japan is also a paternalistic society, so the enterprise and the employees share a common destiny. The culture is built on the teachings of Confucius, which stresses a support-and-dependency relationship between supervisor and subordinate. For this reason, large organizations are concerned about the welfare of all employees.[6]

Unions and management have a good relationship and are cooperative in promoting quality control and quality circles within the work setting. Unions have limited input in the decision-making process and seldom adopt advisory roles. Most of the organization's top and middle management have been union members and thus understand the union's situation. Unions are organized by company rather than by craft or industry, and each enterprise has its own union. Union membership includes supervisors, foremen, and white-collar workers below the management level.[7]

A key factor in the management-union relationship is a concern for the welfare of employees. A major aspect of the philosophy is the lifetime employment system. Layoffs or dismissals of permanent employees are rare. If business is slow, permanent employees are kept on the job until economic conditions improve. Likewise, employees displaced by technology are retrained for new jobs within the organization.[8]

Both the government and the enterprise have expended considerable effort in providing training courses to improve the educational level of the workforce. Japanese companies concentrate on training junior leaders by conducting productivity seminars and teaching participative management techniques.[9]

THE QUALITY CIRCLE PROCESS

Consultants are generally used to assist in the execution of the quality circle program. Initially they give a general orientation course to the company's top management. These advisors have a broad knowledge and practical experience in quality circles. They provide the instruction and encouragement needed in the early stages of implementation. Such instruction may include background information on the origins of the movement as well as introduction to the techniques of conducting quality circles.[10]

The commitment of senior and middle management is crucial to the success of the program. Management must allocate time from duties or payment for the time spent on quality circles. More

importantly, adequate resources must be allocated to the promotion of the program. Finally, management's support can be demonstrated by publicizing quality circle progress, attending presentations and implementing circle suggestions.[11]

After approval has been gained, the next step is to explain the quality circle concept to all levels of the organization. This means that the fears and apprehensions which employees have about the concept must be anticipated and dispelled. The explanation should show the prospective members of the organization that the concept has merit and will help the organization grow without threatening anyone's job or individuals welfare.

After commitment has been secured and quality circles have been explained to the organization, a quality circle structure must be designed. Most quality circle programs consist of a coordinator or steering committee, one or more facilitators, quality circle leaders, and volunteer quality circle members.

Briefly, the coordinator or steering committee serves as the policy-making group, however, they do not become involved in the day-to-day activities of the circle. Instead, they determine general guidelines. Many analysts recommend that the coordinator be an executive-level line manager to insure management support and adequate funding.[12]

The facilitator is responsible for the actual implementation and operation of the program, for training leaders and members in problem-solving techniques, and for training leaders in group

dynamics. The facilitator should be a capable supervisor and should have some training skills. At meetings the facilitator does not interfere with the circle activities; rather he or she listens and provides required assistance. Most consultants recommend that the facilitator position be full-time.[13]

The quality circle leader is generally a foreman or supervisor within the quality circle work area. Persons with such responsibilities should be chosen as circle leader so that they will not feel threatened by circle activities. The supervisor is the only member of management who has direct contact with the workers on a day-to-day basis. He is the buffer between labor, management and the union. Many supervisors have failed to develop a strong commitment to quality circles because they were bypassed while the new programs were being considered.[14] The Quality Circle leader assists the facilitator in training circle members and conducts circle meetings. Voluntary circle members meet weekly--initially to receive training, later to work on projects.

After training, the quality circles work on problem identification. Both quality circles and management may identify problems areas, but the quality circle itself selects the problems they will work on. Quality circle projects usually concern product quality, equipment, efficiency, cost reduction, or safety. The facilitator is often responsible for overseeing solution implementation. Once feasible solutions to a problem

are suggested to management, the quality circle begins on a new problem and the cycle repeats itself.

Quality Circles generally have dual proposes. One set of goals deals with increased productivity and quality improvement. The problems explored by quality circles are often those that prevent workers from doing their assigned work efficiently and well. The goals of some typical efforts include reducing defects, scrap, rework, or downtime. These activities in turn are expected to lead to cost reductions, increased productivity, and higher product quality.[15]

The second set of goals deals with employee involvement. The workers themselves know more about their problems than anyone else; therefore, their suggestions, if successfully carried out, will increase their feelings of accomplishment, pride, self-esteem, and self-fulfillment. With such feelings comes a higher level of commitment to the job and to the organization. At the same time, the circles focus on improving working conditions and self-development of workers.[16]

As emphasized earlier, support from top and middle management is vital to the success of a quality circle program. Quality circles should not be viewed as "Band-Aids for labor problems," since they call for management to make a substantial "commitment to a new corporate culture"[17] As one writer has observed, "We've got to stop searching for the shortcut, the quick fix, the miracle, and start examining our attitudes, our methods, our entire system. It's a complex problem and we've got

to be willing to dissect it dispassionately, then do something about it".[18]

Discussions are limited to issues directly related to the quantity or quality of work, such as paperwork and material waste, machine maintenance, cooperation between departments and productivity. Pay, benefits, hiring or promotion decisions and factors restricted by labor-relations contracts are out of bounds.[19]

HOW QUALITY CIRCLES WORK

Beginning circles often have difficulty knowing where and how to begin. As a guide, the following suggested procedures are basic for identifying and solving problems by some Quality Circles:

1. Upon completion of their training, the quality circle's first task is to identify a list of problems. The members are encouraged to brainstorm to generate a list. Brainstorming helps to create an atmosphere of mutual trust, collaboration and teamwork.

2. The actual selection of a problem is the prerogative of the circle members only. They must choose one problem at a time to work on, analyze and solve. The Delphi technique is frequently used in the selection process.

3. Once the problem has been identified it must be clearly stated as an object with defects, including a depiction of the deviation from what is expected to happen.

4. The next step in the process is the identification and evaluation of different courses of action. This task is simplified by using a cause and effect diagram. Data collection and analysis are practical tools for verifying causes; it aids the members in committing to a consensus on the most probable cause.

5. At this stage the members identify and evaluate solutions. The members must identify the cost of the various alternatives being considered and analyze the potential problems that could arise from implementation of each of the proposed solutions.

6. With sufficient data available, circle members are capable of entering into discussion and valuations leading to a consensus decision on the best solution for the problem.

7. At this juncture an implementation plan is designed on how the solution will be carried out. The details should include the identification of all potential problems analyzed; a contingency plan should be developed as well.

8. When all the alternatives and potential problems have been scrutinized , the detailed plans are prepared for formal presentation to management.

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CHAPTER 3

QUALITY CIRCLES IN THE GOVERNMENT SECTOR

Quality circles began to appear in Department of Defense organizations in the late 1970s. The use of these problem-solving teams expanded rapidly and by 1984 when reportedly over 2,000 quality circles have been formed in the Defense Department. The Department has been pursuing strategies in participative management. Efforts are being made to tap the know how of the work force, and they seem to be paying off. Generally, over 80% of all quality circle solutions have been accepted and implemented.[1]

White Sands Missile Range has had considerable success with quality circles in a relatively short time. Currently, they have 24 quality circles involving over 160 employees ranging in occupations form engineering, administrative, and clerical support to skilled trades.[2]

The cost/benefit ratio for development of quality circles at the White Sands Missile Range has been almost 1-to-2.5 (for example, every $1 invested in quality circles the government yields a return of $2.5). Expected annual benefits from implementation of quality circles, based on the first year and a half(FY 84-85) of operation, were almost half a million dollars.[3] The U.S. Army Depot Systems Command, after more than three years of using quality circles, has achieved over a 1-to-3 cost/benefit ratio. More importantly, benefits are being realized in less measurable but highly desirable areas such as communications, job

measurable but highly suitable areas such as communication, job satisfaction, worker's pride in the end products and service."[4]

Likewise, a recent study of Social Security administration employees involved in Quality Circles reported that 96 percent of those surveyed felt highly motivated from the feeling of achievement derived from doing challenging work well, and 94 percent were highly motivated by the inner drive to always try to do a good job. One of the managers was quoted as saying: "From the intangibles of untapped human resources may ultimately flow the benefits of improved quality, cost reductions and increased productivity."[5]

The Army Depot Systems Command (DESCOM) headquartered at Chambersburg, Pennsylvania monitors approximately 300 active quality circles throughout DESCOM. They comprise the largest number of the Army's quality circles. The majority are located within depot supply and maintenance operations. Approximately 2,800 employees participate one hour each week in quality circle activities. This represents 6 percent of the command population. The command has set a goal for membership in quality circles to grow 12 percent each year.[6]

Also, consider the machinists in the "Triple Deuce" quality circle at Norfolk Naval Rework Facility. They are saving the Navy some $400,000 a year. By reorganizing their tool room to serve their needs better, they eliminated a great deal of waste and inefficiency in stocking, issuing, and maintaining tools. Another circle at Norfolk Air Rework Facility cut the cost of

reworking wing seals for the F-14 aircraft by streamlining and standardizing procedures; they are saving the shipyard some $300,000 a year.[7]

Overall the return on investment in training and time devoted to problem solving through quality circles has ranged from $4 to $28 for each dollar invested. Other benefits include such intangibles as better morale, reduced absenteeism and turnover, and improved communications between labor and management.[8]

QUALITY TEAMS

Perhaps the best way to describe the relationship between Quality Circles and Quality Teams is that Quality Teams are the next step beyond Quality Circles. They are a blend of Quality Circles, suggestion systems, and participative management. Making everyone responsible for improving productivity via Quality Teams provides the way.

The team is a blend of expertise from the Quality Circle pool; through them potential problems are approached on cross-functional lines. A special council is established as the coordinating agency to prioritize and suggest problems to be studied by the team, as shown in Figure 1.

Ideas that involve more than one team do not meet with the same degree of resistance that the "us versus them" quality circle approach breeds.[9] Since everyone is on a team, and since any team may need help implementing an idea at some point, mutual

TEAM NETWORK CONCEPT

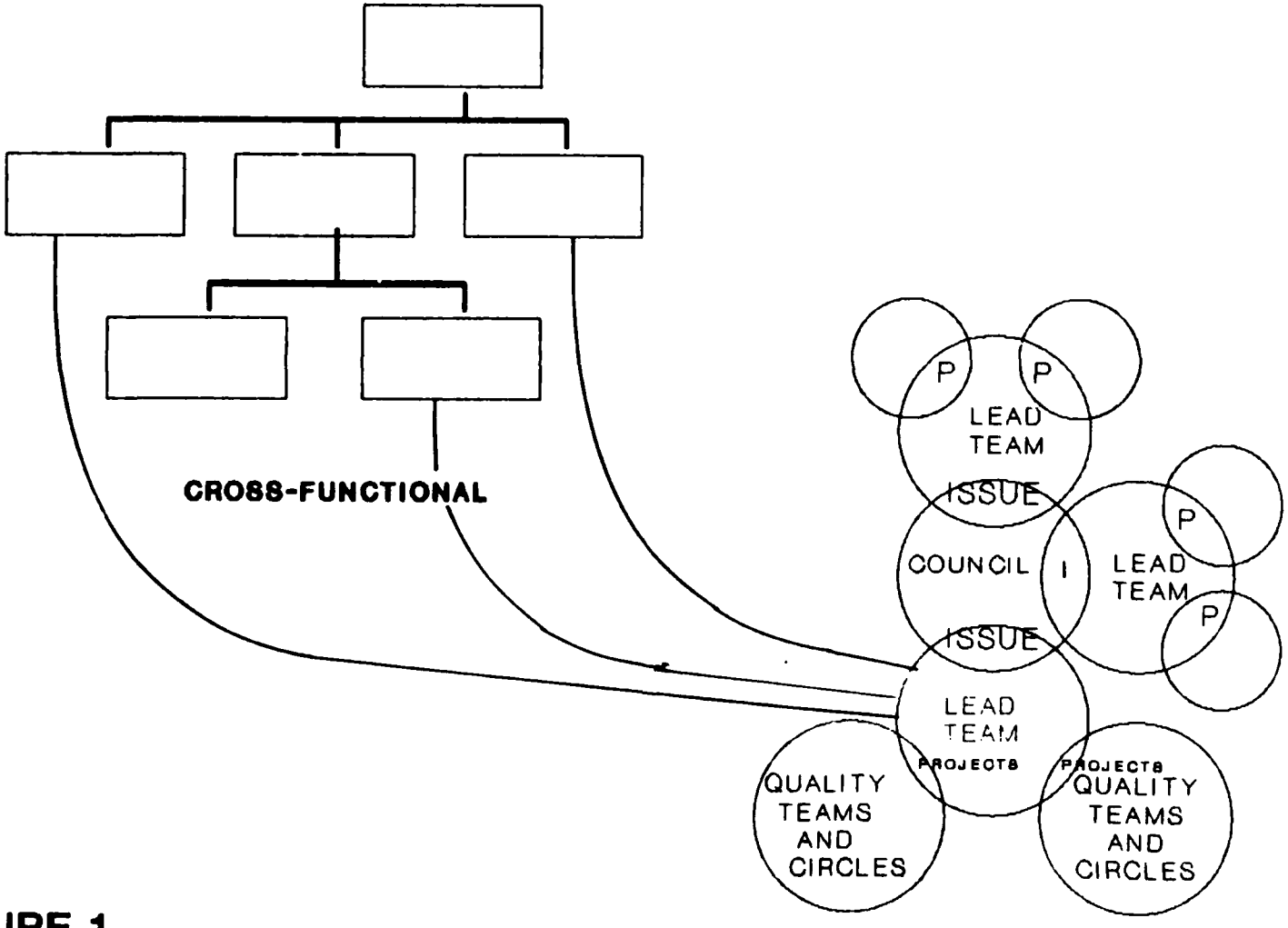

FIGURE 1

cooperation is in everyone's best interest. Through sharing ideas, most resistance to implementation is eliminated. As habits of quality are established, there is an accompanying recognition that there is always room for improvement.[10]

FACTORS CONTRIBUTING TO QUALITY CIRCLE SUCCESS

Having seen the tremendous improvements that are achieved through the operation of Quality Circles, one cannot avoid thinking about the reasons behind such accomplishments. Factors which appear to contribute to the success of Quality Circles include the following:

1. The quality circle concept is a people building endeavor, not a people using philosophy. They promote open and trusting communications with the employee, the union and management.

2. Quality Circles should stated slowly, and then allowed to grow naturally. Also steering committee members, the facilitator, and the circle leaders must be carefully selected.

3. Training is very important; it should be emphasized and reemphasized.

4. Progress in the beginning stages is very slow while circle members learn the techniques and how to work with each other.

5. The emphasis should be on people solving problems and not on hierarchical pyramids of paperwork.

6. Management must learn how to positively reinforce participative behaviors, by allowing time to be scheduled to permit the group to perform activities that are expected of them.

7. As many suggestions as possible should be implemented as quickly as feasible. Feedback should be provided to the circle regarding the reasons for delays or non-implementation.

8. Management must advertise its commitment not to lay off employees as a result of quality circle suggestions.

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CHAPTER 4

CONCLUSION

This study has presented Quality Circles as a unique way of increasing organizational effectiveness and efficiency. Certainly we have seen how the concept works and traced its transfer to our culture from Japan. Military institutions and other organizations within the Department of Defense have implemented successful quality circles programs. Quality Circles are a slow-growing process of changing individuals and organizations. As trust between the leadership and the individual develops, a commitment to the success of the organization is enhanced through proliferation of Quality Circles.

The Quality Circle process can provide the basis for establishing a totally integrated effort toward improving performance at every level of an organization. This improved performance is directed toward satisfying such cross-functional goals such as quality, cost, mission need and suitability. Total Quality Teams can be created to function as vehicles to achieve the strategic goals of the organization.

Taking steps to promote the institutionalization of Quality Circles and other programs is a must if this approach is to become a way of life in the organization and not just another short-term fad.

Management style and management commitment are the most important determinant of Quality Circle programs and

effectiveness. Even when top management is supportive, threatened middle managers have "shot down" programs by withholding support.

Careful, effective training of the coordinators, facilitators, Quality Circle leaders and members is an absolute must.

Finally, all workers deserve the opportunity to perform in an environment in which they are recognized as contributing members of their organization. The overall goal of Quality Circles is to increase employee awareness of costs and quality, and to improve management employee relationships.

CHAPTER 5

RECOMMENDATIONS

At varying echelons of leadership, numerous recommendations and different applications of these recommendations are appropriate. Quality Circles tend to work best in a stable environment where the turbulence of individual turnover is low, such as, Army Depots, Shipyards, Hospitals and anywhere there is a stable civilian/military workforce provide good sites for Quality Circles. It would probably be difficult to fully implement a quality circle program in tactical units. Commanders would be hard pressed to allow time in their already busy training schedule to display positive support for the quality circle process. Moreover, the personnel turnover in this type of organization is too high to maintain a consistent program.

In general the areas discussed below are those that deserve special emphasis within military institutions. The recommendations of this study can be applied and integrated into any institution.

A successful Quality Circle program crucially depends on management's total commitment. Government and Industry must create the climate which will foster quality control programs. It is up to management to institutionalize Quality/productivity initiatives and implement strong well-defined policies to establish direction and continuity.

In order for Quality Circles to jointly participate in Total Quality Control programs, a cross-functional atmosphere should be

established to integrate initiatives undertaken throughout the organization into a unified approach.

Training is a vital component in the Quality Circle process. Lack of proper training for managers, supervisors, facilitators, and circle members is one of the main causes of Quality Circle failures. For Quality Circles to prosper in an organization, there must be a long term commitment by management and an investment in training employees and executives alike.

The union must be involved from the outset in any quality circle process. The union also must play an ongoing, active and supportive role after implementation.

Quality Circles provide a wide range of applications to the military environment. The inherent practices that Quality Circles provide encourage change, identify opportunities for improvement, and stimulate innovative ideas.

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